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EC77-122 Wheat Grading Factors

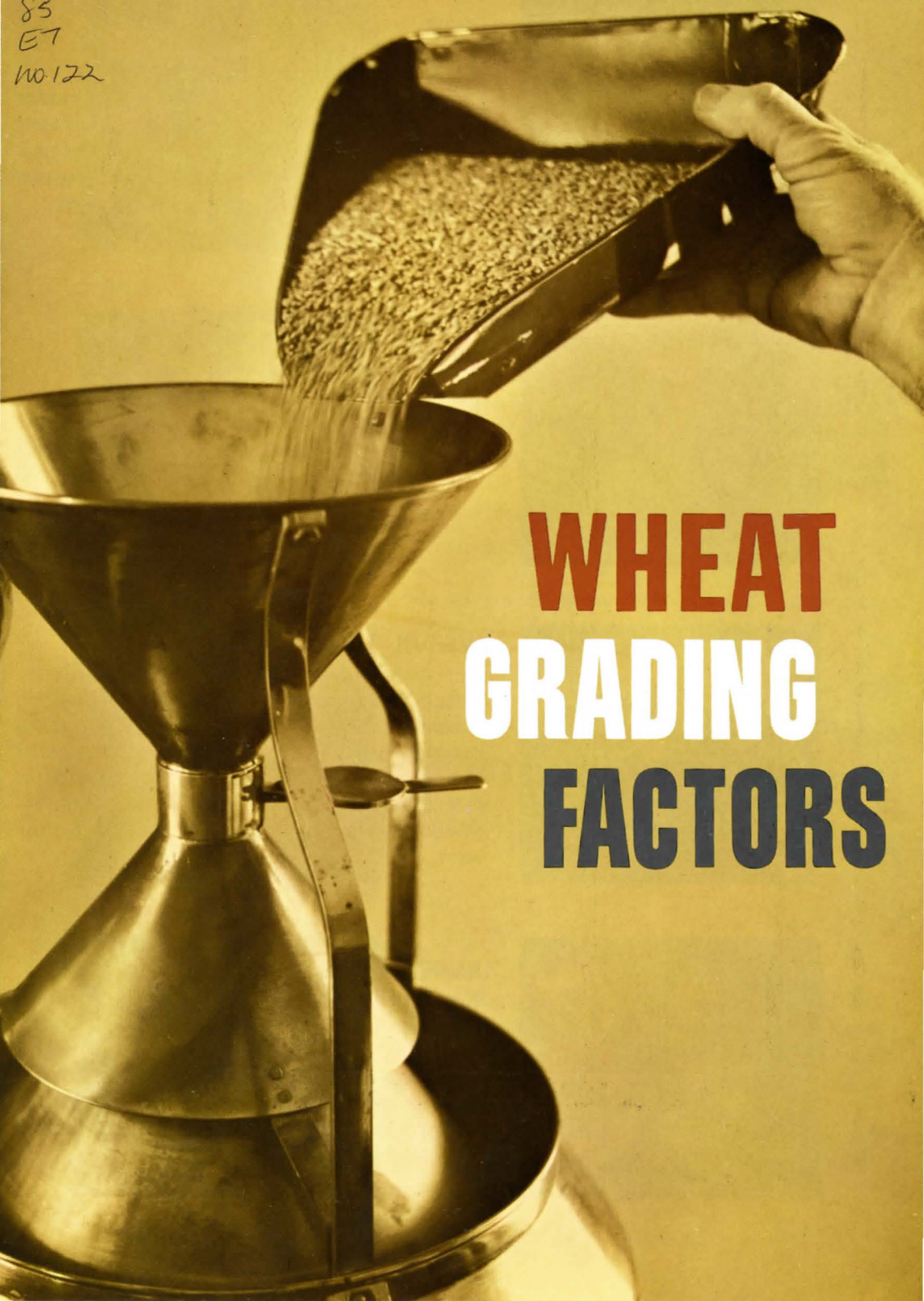
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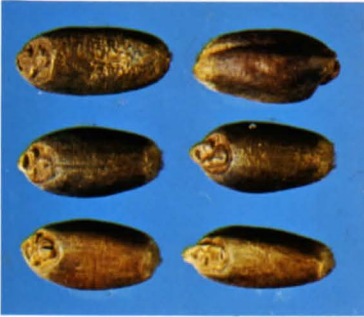
WHEAT GRADING FACTORS

PRINCIPAL WHEAT



SICK WHEAT (Germs Scraped)

"Sick" wheat is a type of storage damage usually identified by brown, discolored germs, evidence of dead, deteriorated germs, and of other damage to the kernel. Samples of sick wheat usually have a musty odor.



HEAT DAMAGED

Heat-damaged kernels shall be kernels and pieces of kernels of wheat and other grains which have been materially discolored and damaged by heat.



WEEVIL OR INSECT BORED

Kernels which have been bored internally by insects are damaged kernels. Kernels that are otherwise sound, but which are only slightly eaten by insects or from which only the germ has been removed by insects, are classified as sound kernels. Wheat showing material evidence of insect infestation may carry a sour odor.



BLACK-TIP FUNGUS

Kernels that are affected by black-tip fungus to the extent that the fungus growth covers the germ face and extends into the crease of the kernel are considered damaged kernels. Kernels on which the fungus growth is limited to the germ face are not considered damaged.

KERNEL DAMAGES



SPROUTED

Kernels in which the germ end has been opened by germination and show sprout, or from which the sprouts have broken off leaving only the socket.



BLIGHT AND SCAB

Kernels that are affected by blight and scab show the following: the bran coat is broken open; kernels show evidence of mold, or other disease or damaged condition; kernels have a dull, lifeless, and chalky appearance (so-called "tombstone") as a result of disease; and such kernels also have a moldy appearance of the germ or have mold in the crease of the kernel.



GREEN (Immature)

Kernels which are green (immature) in color. The green color should be intense and without any yellow appearance. NOTE: Do not confuse with candied kernels.



FROSTED

Kernels which are green or are discolored black or brown, or which have frost blisters extending around the back of the kernels and into the crease; or which have the bran coat partially flaked off; or which have a distinctly wax-like or candied appearance, shall be damaged kernels.

OTHER GRADING FACTORS



DOCKAGE

All matter other than wheat which can be removed readily from a test portion of the original sample by use of an approved device in accordance with procedures prescribed in the Grain Inspection Manual. Also, underdeveloped, shriveled, and small pieces of wheat kernels removed in properly separating the material other than wheat and which cannot be recovered by properly rescreening or recleaning.



FOREIGN MATERIAL

All matter other than wheat which remains in the sample after the removal of dockage and shrunken and broken kernels.



SHRUNKEN AND BROKEN KERNELS

All matter which can be removed from a test portion of the dockage-free sample by use of an approved device in accordance with procedures prescribed in the Grain Inspection Manual. For the purpose of this paragraph "approved device" shall be the 0.064 x 3/8-inch oblong-hole sieve.

DISTINCTLY LOW QUALITY (DLQ)

Wheat which is obviously of inferior quality because it contains foreign substances or because it is in an unusual state of condition, and which cannot be graded properly by use of the other grading factors provided in the standards. It shall include any objects too large to enter the sampling device; i.e., large stones, wreckage, etc.

SPECIAL GRADES



WEEVILY

Wheat which is infested with live weevils or other insects injurious to stored grain. As applied to wheat, the meaning of the term "infested" is set forth in the Grain Inspection Manual. (More than one live weevil in approximately 1000 grams is an example.) FDA criteria for seizure includes 32 or more insect damaged kernels per 100 grams.



SMUTTY

"Light smutty" is wheat which has an unmistakable odor of smut, or which contains in a 250-gram portion smut balls, portions of smut balls or spores of smut in excess of a quantity equal to 14 smut balls, but not in excess of a quantity equal to 30 smut balls of average size.

"Smutty" wheat contains in a 250-gram portion smut balls, portions of smut balls, or spores of smut in excess of a quantity equal to 30 smut balls of average size.



ERGOTY

Wheat which contains more than 0.30 percent of ergot.



GARLICKY

"Light garlicky" wheat contains in a 1,000-gram portion two or more, but not more than six, green garlic bulblets, or an equivalent quantity of dry or partly dry bulblets. "Garlicky" wheat contains in a 1,000-gram portion more than six green garlic bulblets or an equivalent quantity of dry or partly dry bulblets.



TREATED

Wheat which has been scoured, limed, washed, sulfured, or treated in such a manner that the true quality is not reflected by either the U.S. numerical grade or the U.S. Sample grade designation alone.

BASIS OF DETERMINATION

Determination of sample grade factors shall be on the basis of the sample as a whole.

All other determinations shall be upon the basis of the grain when free from dockage; except that the determination of heat-damaged kernels, damaged kernels (total), and foreign materials shall be upon the basis of the grain when free from dockage and shrunken and broken kernels.

Grades and grade requirements for all classes of wheat, except Mixed wheat.

Grade	Minimum test weight per bushel (pounds)		Percent maximum limits of —						Wheat of other classes ³
	Hard Red Spring wheat or White Club wheat	All other classes and sub-classes	Heat-damaged kernels	Damaged kernels (total) ¹	Foreign material	Shrunken and broken kernels	Defects (total) ²	Contrasting classes	
U.S. No. 1	58	60	0.2	2	0.5	3	3	1	3
U.S. No. 2	57	58	.2	4	1.0	5	5	2	5
U.S. No. 3	55	56	.5	7	2.0	8	8	3	10
U.S. No. 4	53	54	1.0	10	3.0	12	12	10	10
U.S. No. 5	50	51	3.0	15	5.0	20	20	10	10

U.S. sample

U.S. sample grade shall be wheat which:

- (1) Does not meet the requirements for the grades U.S. Nos. 1, 2, 3, 4, or 5; or
- (2) Contains a quantity of smut so great that 1 or more of the grade requirements cannot be determined accurately; or
- (3) Contains 8 or more stones, 2 or more pieces of glass, 3 or more crotalaria seeds, 3 or more castor beans, 4 or more particles of an unknown foreign substance(s) or a commonly recognized harmful or toxic substance(s), or 2 or more rodent pellets, bird droppings, or an equivalent quantity of other animal filth per 1,000 g of wheat; or
- (4) Has a musty, sour, or commercially objectionable foreign odor (except smut or garlic odor); or
- (5) Is heating or otherwise of distinctly low quality.

1 Includes heat-damaged kernels.

2 Defects (total) include damaged kernels (total), foreign material, and shrunken and broken kernels. The sum of these factors may not exceed the limit for defects.

3 Unclassed wheat of any grade may contain not more than 10 percent of wheat of other classes.

4 Includes contrasting classes.

Revised by Robert W. Schoeff, Feed and Grain Marketing, Kansas State University, and R. E. "Gus" Page, Extension Economist, Grain Marketing, Oklahoma State University. The authors wish to express sincere appreciation to representatives of the Federal Grain Inspection Service for their assistance.

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